Polymer Electrolytes Crosslinked by Ultraviolet Radiation

Abstract

A method is provided for making a crosslinked polymer electrolyte, typically in the form of a membrane for use as a polymer electrolyte membrane in an electrolytic cell such as a fuel cell, as well as the polymer so made, the method comprising application of ultraviolet radiation to a highly fluorinated fluoropolymer comprising: a backbone derived in part from tetrafluoro-ethylene monomer, first pendent groups which include a group according to the formula $-SO_2X$, where X is F, Cl, Br, OH or $-O^-M^+$, where M^+ is a monovalent cation, and second pendent groups which include Br, Cl or I. Typically, the membrane has a thickness of 90 microns or less, more typically 60 or less, and most typically 30 microns or less.